

Shutter CLA

The screws used in all Graflex cameras are for a given position and may not be readily interchangeable with other positions in the camera. The earliest cameras screws are not the same exact diameter within a given assembly, the back may have 3 different diameter screws of the same length all called #2 but the actual diameter varies by .0001 to .0005 inch causing some screws to be a loose fit in some holes or a tight fit in others.

The body of the camera is 1/8 thick Honduran Mahogany. Screw holes strip easily. To repair a stripped screw hole cut a piece of round dowel that same diameter and length of the hole, coat the dowel with wood glue, insert into the striped/loose hole, allow to set, make a pilot point indentation where the center of the screw should be with an ice pick or similar device, then insert the screw.

- 1.** Step curtain to closed after O open setting or the lowest setting it will run down to.
- 2.** Step tension setting to 1 and leave there for all servicing and adjustments.
- 3.** Remove the *Hex Nut* on the tension plate.
- 4.** Remove the 4 screws that hold the tension plate onto to camera and put in a secure place.
- 5.** Put a small slot screwdriver into the lower curtain roller tension spring slot (under the hex nut that was removed in step 3) and lift the tension plate off the camera.
- 6.** Allow the spring to unwind slowly counting the number of turns to reach zero tension and record.
- 7.** On the left side of the camera body remove the curtain roller bushings one at a time.
 - 7a.** Clean the bushing and roller shaft with degreaser.
 - 7b.** Fill the bushing open with white lithium grease or a similar grease.
 - 7c.** Reinstall the bushing making certain that the roller shaft is in the bushing and not pushed to one side.
 - 7d.** On the lower roller put a drop or two of light weight machine oil where the shaft meets the roller flange.
- 8.** Remove the wind plate, lube, reinstall per instructions 2.
 - 8a.** Put a drop or two of machine oil around the top roller at the wind plate, the wind key base and trip lever in lieu of step 8.
- 9.** Put a thin coat of grease on the tension plate gear teeth and a drop of oil on its shaft.
 - 9a.** Note the flat spot on the gear. Tension 1 should just mesh with the lower roller shaft gear next to the flat (no tooth) place and tension 6 will be at the other side.

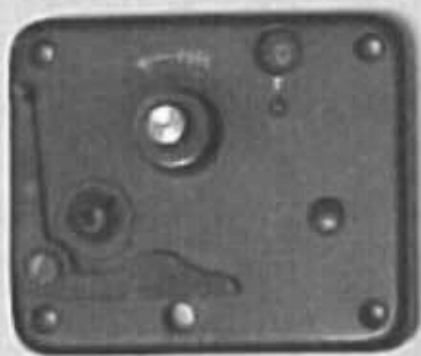
- 10.** Put a small screwdriver thru the lower roller opening in the tension plate, engage it with the lower roller spring slot, turn the spring the number of turns recorded in step 6. Position the tension plate onto the body with 1 showing center of the window and the gears meshed.
- 11.** Put two screws diagonally from each other and just snug enough to hold the tension plate steady.
- 12.** Wind the curtain to the O position.
- 13.** Trip the shutter. It should close and lock. If it fails to lock lift the tension plate and increase the tension $\frac{1}{4}$ to $\frac{1}{2}$ turn and retest.
- 14.** When the curtain passes step 13 closing test set the tension to 6 and wind the curtain to its smallest opening. Trip and rewind the curtain. If you cannot wind the curtain to the smallest opening with the tension at 6 the initial tension is too high indicating other problems with the shutter.
- 15.** Remove the camera back by removing the screws around the perimeter perimeter and across the top and bottom edges. The back will have to be rotated to access them. Loosen the two rear screws on the wind plate 1 to 2 turns. Pull back on the back. If it appears stuck a screw has been missed.
- 16.** Starting at one end of the curtain coat it with Pledge natural beauty (Yellow spray can, not the wipes). Coat the entire length of the curtain and allow it to soak for 15 to 30 minutes. Wipe off and rub in the pledge with a clean soft cloth. The pledge will soften the curtain and restore it to a more flexible state. The pledge works well on the body leather, view hood, and bellows as well.
- 17.** Reinstall the back.

Wind plate servicing

- 1.** Remove the camera back by removing all screws along both sides and across the top and bottom of the back. The back will need to be rotated to access all screws. Loosen the two rear screws of the the wind plate 1 to 2 turns. The back should slip off once all screws are removed. Any bind is a missed screw.
- 2.** Run curtain down to closed after O. Set tension to 1.
- 3.** Turn camera upside down, place a support block under the mirror lock shaft/lever, and drive the tapered pin that holds the lever to the shaft using a 1/16 drive punch and a mallet. A hole in the block will be necessary for the pin to fall into. The pin becomes seized after many years. A little penetrating oil allowed to sit for a few hours may help.
WARNING: failure to support the mirror shaft when driving the pin out will result in a bent or broken mirror shaft.
- 4.** Remove the 4 screws that hold the wind plate to the camera body and lift the plate off the body.
- 5.** Unscrew the top roller bushing, clean it with degreaser, fill with white lithium grease and reinstall.
- 6.** Coat the wind mechanism and gear teeth with a light coat of white lithium grease.
- 7.** With the wind key at the same position it was when removed reinstall the wind plate onto the camera body meshing the wind gear with the top roller gear.
- 8.** Insert the tapered pin into the mirror lever/shaft lightly.
- 9.** Wind the curtain until O is showing in the window.
- 10.** Check the curtain position. The open slot should be equal distant either side of the back opening. If it is not remove the wind plate, adjust curtain position and reinstall wind plate keeping the O centered in the window and the curtain centered on the back opening.
- 11.** Wind the curtain to each of the remaining apertures. The aperture widths should be visible near the center of the wind window. The bottom of the curtain opening should be ¼ inch above the top of the back opening when wound to the setting and the top of the curtain opening ¼ inch below the back opening once the shutter has been tripped for all apertures.

Curtain Removal

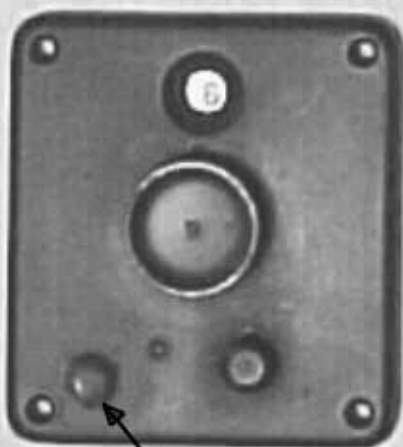
- 1.** Wind all of the curtain to the lower roller, or at least as much that will.
- 2.** Remove the camera back keeping its screws separate from the rest of the camera. The round/oval head screws are around the perimeter, flat head under the revolving plate which must be turned to access all screws.
- 3.** Remove the tensioning plate according to the instructions in part 1.
- 4.** Remove the wind plate according to the instructions in part 2.
- 5.** Remove the bottom plate keeping the screws separate from other parts of the camera.
- 6.** Disengage the top roller from the bushing on the left side and slip the roller with curtain attached out of the body. The curtain may have to be removed from the roller to allow the roller to slide into the wind opening far enough to permit clearance on the left side on some formats.
- 7.** Slip the lower roller from its bushing on the left side, position the right side from the tensioning opening by tilting the roller as needed then slide it out the bottom of the camera.
- 8.** Carefully feed the curtain and top roller into and out of the lower roller body opening.
- 9.** Using a straight edge mark the existing curtain edge on the roller with a #2 pencil.
- 10.** Remove the curtain from the roller(s) if replacing the curtain.
- 11.** The curtain roller bushings can be removed prior to roller removal if desired or needed. Smaller bodies the bushing is a wood insert that is hollow and screws into the body. A special tool to fit the notches can be fabricated from sheet metal or an adjustable lens spanner wrench may be used. On larger bodies the bushings may be attached with 3 wood screws.
- 12.** Installation is the reverse of removal.



old



older



remove hex nut

